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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/783,999	02/20/2004	Charles M. Potter	1028-025US01	4355
28863 7590 03/06/2008 SHUMAKER & SIEFFERT, P. A. 1625 RADIO DRIVE SUITE 300 WOODBURY, MN 55125				
EXAMINER				
LIN, SHEW FEN				
ART UNIT		PAPER NUMBER		
2166				
NOTIFICATION DATE		DELIVERY MODE		
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

docketing@ssiplaw.com

Office Action Summary

Application No.

10/783,999

Applicant(s)

POTTER ET AL.

Examiner

SHEW-FEN LIN

Art Unit

2166

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 December 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-946)
- 3) ☐ Information Disclosure Statement(s) (PTO/SF/US)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

- a. This action is taken in response to Request for Continued Examination filed on 12/20/2007.
- b. Claims 1-16 are pending in this Office Action. Claims 1 and 12 are independent claims.
- c. In view of the amendment to claim 12, the Examiner hereby withdraws the pending 101 Rejection that was given in the previous Office Action.

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on December 20, 2007 has been entered.

Claim Rejections – 35 USC § 101

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 1-11 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

The claims lack the necessary physical articles or objects to constitute a machine or a manufacture within the meaning of 35 USC 101. They are clearly not a series of steps or acts to be a process nor are they a combination of chemical compounds to be a composition of matter. As such, they fail to fall within a statutory category. They are, at best, functional descriptive material *per se*.

Descriptive material can be characterized as either "functional descriptive material" or "nonfunctional descriptive material." Both types of "descriptive material" are nonstatutory when claimed as descriptive material *per se*, 33 F.3d at 1360, 31 USPQ2d at 1759. When functional descriptive material is recorded on some computer-readable medium, it becomes structurally and functionally interrelated to the medium and will be statutory in most cases since use of technology permits the function of the descriptive material to be realized. Compare *In re Lowry*, 32 F.3d 1579, 1583-84, 32 USPQ2d 1031, 1035 (Fed Cir. 1994).

Merely claiming nonfunctional descriptive material, i.e., abstract ideas stored on a computer-readable medium, in a computer, or on an electromagnetic carrier signal, does not make it statutory. See *Diehr*, 450 U.S. at 185-86, 209 USPQ at 8 (noting that the claims for an algorithm in *Benson* were unpatentable as abstract ideas because "[t]he sole practical application of the algorithm was in connection with the programming of a general purpose computer.").

Claim 1 recites "a computer-implemented system", which is interpreted as a computer program, however, the claim fails to assert the program recorded on an appropriate computer-readable medium so as to be structurally and functionally interrelated to the medium and permit the function of the descriptive material to be realized. Since a computer program is merely a set of instructions capable of being executed by a computer without a computer-readable medium needed to realize the computer program's functionality, it is regarded as nonstatutory functional descriptive material.

Regarding claims 2-11 depend from rejected claim 1, comprise the same deficiencies as those claims directly or indirectly by dependence, and are therefore rejected on the same basis.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-6, 9, and 11-13 are rejected under 35 U.S.C. 102(e) as being anticipated by Yeh (US Patent 6,980,980).

As to claim 1, Yeh discloses a computer-implemented system for storing data (Fig. 6, col. 1, lines 7-13), the system comprising: one or more member cubes (detailed cubes, abstract, Fig. 4, item 26) for storing data partitioned along a dimension (col. 2, lines 17-20, lines 49-65); a control cube for accessing the member cubes (summary cube, Figs. 4, 8, item 28, col. 2, lines 65-67, col. 3, lines 46-50, col. 8, lines 23-27, navigate between information in the summary cube database component and information in the detail cube database component, i.e. access information from summary cube to detail cube or visa versa).

As to claim 2, Yeh discloses wherein the control cube has an entire partitioned dimension relative to the member cubes (col. 2, lines 49-58, col. 6, lines 48-51, col. 8, lines 21-28).

As to claim 3, Yeh discloses the system as claimed in claim 2, wherein the control cube further has: a listing of other dimensions of the member cubes (col. 7, lines 50-52); and a listing of measures of the member cubes (Figures 2-5, col. 5, lines 20-35, col. 6, lines 43-46).

As to claim 4, Yeh discloses wherein the data is partitioned along the time dimension (Figures 1 and 5).

As to claim 5, Yeh discloses the system as claimed in claim 4, wherein the control cube has: an entire time dimension relative to the member cubes (col. 2, lines 52-56); a listing of other dimensions of the member cubes (shared dimensions, Fig. 4 item 36); and a listing of measures of the member cubes (Fig. 5).

As to claim 6, Yeh discloses the system as claimed in claim 5, wherein a member cube is added to the system (add new detailed cube, col. 2, lines 28-32, col. 7, lines 58-63).

As to claim 9, Yeh discloses the system as claimed in claim 5, further comprising a plurality of control cubes, each control cube coupled with a group of member cubes from a pool of member cubes to form a separate dimension-based partitioned cube (col. 7, lines 12-19).

As to claim 11, Yeh discloses the system as claimed in claim 2, wherein a member cube is the control cube of another dimension-based partitioned cube (col. 3, lines 60-63, col. 7, lines 12-23).

As to claim 12, Yeh discloses a method of transforming a body of data into a dimension-based partitioned cube (abstract), the method comprising the steps of: partitioning the data into one or more dimension-based partitions (col. 1, lines 17-20, lines 59-65); creating member cubes corresponding to the one or more dimension-based partitions (detailed cubes, Fig. 4, item 26, col. 2, lines 17-20, lines 49-65, col. 3, lines 39-41); and creating a control cube for representing the data distributed over the member cubes (summary cube, summary cube contains the members of an upper level of a dimension, Figs. 4, 8, item 28, col. 2, lines 65-67, col. 3, lines 46-50, col. 8, lines 23-27).

As to claim 13, Yeh discloses wherein the data is partitioned along the time dimension (Figures 1 and 5).

Claims 1 and 12 are rejected, in the alternative as presented in the earlier section of this office action, under 35 U.S.C. 102(e) as being anticipated by Zait et al. (US Patent 6,931,390, hereinafter "Zait").

As to claim 1, Zait discloses a computer-implemented system for storing data (Fig. 7, col. 4, line 39-40), the system comprising: one or more member cubes for storing data partitioned

along a dimension (Figs. 1a/1b, 3-5, col. 1, lines 24-32, col. 47-54, col. 4, lines 9-28, lines 44-60); a control cube for accessing the member cubes (col. 2, lines 57-65, col. 4, lines 9-21, lines 53-60, fact table connects to one or more partitioning dimension tables).

As to claim 12, Zait discloses a method of transforming a body of data into a dimension-based partitioned cube (Figs. 1a/1b), the method comprising the steps of: partitioning the data into one or more dimension-based partitions (Figs. 1a/1b, 3-5, col. 1, lines 24-32, 47-54, col. 4, lines 9-28, lines 44-60); creating member cubes corresponding to the one or more dimension-based partitions (Figs. 4-5, col. 1, lines 32-45, col. 5, line 64 to col. 6, line 10, creating partitioned tables, i.e. member cubes); and creating a control cube for representing the data distributed over the member cubes (Fig. 4, col. 2, lines 57-65, col. 4, lines 9-21, lines 53-60, sale fact table, 100 and partitioned table, p1,p2,p3,p4).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point

out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 7 and 14-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yeh as applied to claim 13 above, and further in view of Joy Mundy ("Using Partitions in a Microsoft SQL Server 2000 Data Warehouse", February 2001, <http://msdn.microsoft.com/library/default.asp?url=/library/en-us/dnsq12k/html/partitionsindw.asp>, hereinafter referred as Mundy).

As to claim 7, Yeh discloses the element of claim 5 as noted above but does not explicitly disclose wherein a member cube is removed from the system.

Mundy discloses dropping old partitions either after merging or just to remove aged partition (pages 7 and 10).

It would have been obvious to a person of ordinary skill in the art at the time of invention was made to modify Yeh's disclosure to drop old partitions as taught by Mundy for the purpose of keeping most recent data in cubes. The skilled artisan would have been motivated to improve the invention of Yeh per the above to remove daily partition after merging into weekly partition (page 12).

As to claims 14-16, Yeh discloses partitioning along time dimension as noted above but does not explicitly disclose data is partitioned into equidistant, non-equidistant or sliding window of time intervals.

Mundy discloses time (date) dimension is usually the first partition dimension (pages 7 and 8) and can be choose a different granularity such as day, week, month or year (page 5). It is common to define a partition plan that drills down on one part of the cube. For example, recent data may be partitioned by day or week, older data by month or year (pages 9 and 15). Different time interval partition (equal interval: days, non-equal interval: day-week, sliding window interval: day, week, month, year) is used to build partition in order to minimize the number of active partitions.

It would have been obvious to a person of ordinary skill in the art at the time of invention was made to modify Yeh's disclosure to include equidistant, non-equidistant or sliding window of time intervals to partition time dimension as taught by Mundy for the purpose of merging the aged data together. The skilled artisan would have been motivated to improve the invention of Yeh per the above to optimize the number of the partitions and query performance (page 12).

Claims 8 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yeh as applied to claims 5 and 9 above, and further in view of Pasumansky et al. (US Patent 6,477,536, hereinafter referred as Pasumansky).

As to claim 8, Yeh discloses the system as claimed in claim 5 but does not explicitly disclose wherein the control cube restricts access to member cubes.

Pasumansky discloses maintaining the security information about a cube in a cube metadata. The security information defines the access rights granted to users of OLAP sever with respect to the cube (col. 7, lines 61-64).

It would have been obvious to a person of ordinary skill in the art at the time of invention was made to modify Yeh's disclosure to include security information in the summary cube (associated metadata) as taught by Pasumansky for the purpose of providing data security by exposing only a subset of the cube to a user (col. 2, lines 12-14, Pasumansky). The skilled artisan would have been motivated to improve the invention of Yeh per the above such that there is a flexibility in defining security parameter for a cube (col. 2, lines 1-9).

As to claim 10, Yeh discloses the system as claimed in claim 9 but does not explicitly disclose, wherein different control cubes over the same pool of member cubes restrict data access to different portions of data for different users.

Pasumansky discloses maintaining the security information about a cube in a cube metadata (col. 7, lines 61-64). The security restrictions applied to virtual cubes (summary cube) as not dependent upon security restrictions applied to the physical cubes (col. 11, lines 52-58). Different control cube (summary cube) can have different security information in its metadata and providing different restriction to the same pool of member (physical cubes).

It would have been obvious to a person of ordinary skill in the art at the time of invention was made to modify Yeh's disclosure to include security information in the summary cube (associated metadata) as taught by Pasumansky for the purpose of providing data security by exposing only a subset of the cube to a user (col. 2, lines 12-14, Pasumansky). The skilled

artisan would have been motivated to improve the invention of Yeh per the above such that there is a flexibility in defining security parameter for a cube (col. 2, lines 1-9).

Response to Remarks

Applicant's arguments and remarks have been fully considered but they are not deemed to be persuasive.

Response to remarks on 35 U.S.C. § 102 rejections

In response to applicants' argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., the present invention, the dimensions in member cubes can differ in number, ..., the number, levels and hierarchy of categories of member cubes can differ... It is the control cube that analyzes the selections and filters associated with user query... the detail cubes in Yeh would form a multi-dimensional grid which would be a possibly cumbersome and unbalanced set of detail cubes... the control cube does not contain any data, and no aggregation takes place at the time of cube processing...) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Applicants argue that "Fig. 4 of Yeh does not indicate how this summary cube facilitates the navigation. Thus, the summary cube does not navigate information in detailed cubes." The Examiner respectfully disagrees.

Yeh discloses that a navigation component for implementing zoom in/zoom out events to navigate between information in the summary cube database component and information in the

detail cube database component (Fig. 8, col. 3, lines 46-50), and users can navigate from summary cube 28 to detail cube 26 seamlessly. This navigation functionality, referred to as zoom in/zoom out is analogous to navigating through different scales of digital maps or focusing on targeted objects when taking photographs (col. 8, lines 23-27). Therefore, Yeh teaches accessing detail cubes from summary cube through zoom in/zoom out such as drill down/up as known in the art (col. 2, lines 34-38).

Applicants argue that “Yeh does not teach a control cube having an entire partitioned dimension relative to the member cubes” because Yeh teaches that the summary cube contains only upper level members of partitioned dimension (column 6, lines 9- 11) and not an entire partitioning dimension. The Examiner respectfully disagrees.

Yeh teaches a summary cube contains the members of an upper level of a dimension and a detail cube contains a subset of the members, including zoom in/zoom out events to navigate between information in the summary cube and information in the detail cubes (abstract). In order to zoom in to the detail cubes, the summary cube has an entire partitioned dimension relative to the detail cubes in order to know where to locate the detailed information as shown in Fig. 4, service 1, service 2,.. etc .

Applicants argue that Yeh does not teach a member cube being the control cube and does not represent data distributed over the detailed cubes. The Examiner respectfully disagrees.

The Examiner has addressed the above argument in the last office action. Applicants are reminded that in order to properly address the remark, the applicants have to explicitly suggest or disclose the so-called not teach steps – Applicants’ assertion can not be accepted if it is unsupported by a valid evidence.

Response to remarks on 35 U.S.C. § 103 rejections

Applicants argue, “the assignee of the Yeh reference is the same entity that purports to own the Joy Mundy reference which was published prior to the Yeh reference. As such, Applicants submit that if it were obvious to a skilled person to combine these two references together, Yeh would have included any Joy Mundy functionality in its disclosure”. The Examiner respectfully disagrees.

Obviousness is established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. The test is what the combined teachings of the references would have suggested to those of ordinary skill in the art. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981). Whether prior arts have the same assignee or the order of prior arts published date is irrelevant to USC 103 rejection.

Related Prior Arts

The following list of prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- DeKimpe; Daniel Martin et al., US 6542895 B1, “Multi-dimensional restructure performance when adding or removing dimensions and dimensions members”
- Reddy; Venugopal P. et al., US 6839711 B1, “Configurable space-time performance trade-off in multidimensional data base systems”

- Kornelson; Kevin Paul et al., US 7024431 B1, "Data transformation to maintain detailed user information in a data warehouse"

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shew-Fen Lin whose telephone number is 571-272-2672. The examiner can normally be reached on 8:30AM - 5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hosain Alam can be reached on 571-272-3978. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Hosain T Alam/
Supervisory Patent Examiner, Art Unit 2166

February 24, 2008

Shew-Fen Lin /S. L./
Examiner, Art Unit 2166

